Direct Crystallization of Aluminum and Lead

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Lately, both cosmic object transactions [1] and gravitational matter transactions are developing successfully [2]. In space the acceleration reaches up to $9\text{-}10^{-5}$g ($9.81 m/s^2$), while acceleration in a centrifuge can achieve up to $a=10^6$g. If the cosmic technology is not available, then gravitational matter transactions are available for many investigators for the study of this kind it is necessary only to have a common centrifuge.

The paper deals with the results of the purification of aluminum (99.999%) in the centrifugal field in the condition of high gravity. The directed crystallization of aluminum and lead with its mixtures were carried out in the condition of high gravity using the checker [2]: the acceleration – $a=10^3$g(d), the temperature of the melting zone – 1050K, the crystallization rate – V=2 cm/hour, the length of the zone – l=1cm, the aluminum sample length L=10cm. The analyses of the aluminum and lead compound was carried out by the neutron – activation method [3].

For the higher precision of the mixture concentration and of the segregation coefficient K_r, the crystallization zone have been carried out three times (n=3).

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